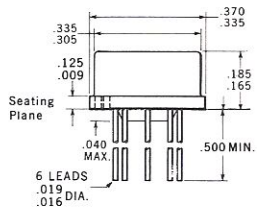
μA703
RF-IF AMPLIFIER
FAIRCHILD LINEAR INTEGRATED CIRCUITS

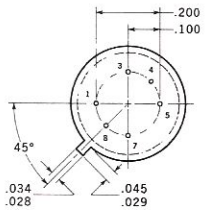
GENERAL DESCRIPTION - The μA703 is an RF-IF amplifier constructed on a single silicon chip and is intended for use as a limiting or nonlimiting amplifier, harmonic mixer, or oscillator to 150 MHz. The low internal feedback of the device insures a higher stability-limited gain than that available from conventional circuitry. Including the biasing network in the same package reduces the number of external components required, thereby increasing the reliability and versatility of the device.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage	20 V
Output Collector Voltage	24 V
Voltage Between Input Terminals	±5.0 V
Internal Power Dissipation (Note 1)	200 mW
Operating Temperature Range	-55°C to +125°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering - 60 seconds)	300°C

PHYSICAL DIMENSIONS
(in accordance with JEDEC TO-99 outline)

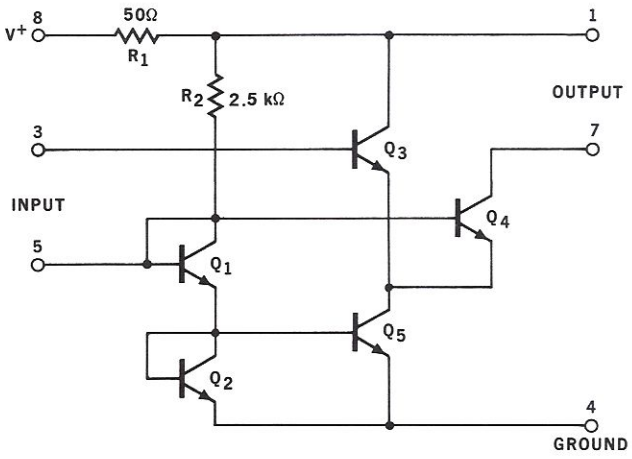




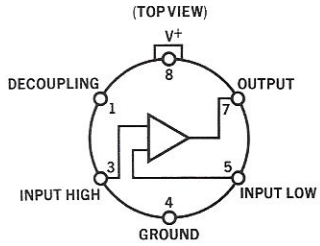
NOTES: All dimensions in inches
Leads are gold-plated kovar
Package weight is 1.27 grams

ORDER PART NO. U5D770331X

SCHEMATIC DIAGRAM



CONNECTION DIAGRAM



NOTE: Pin 4 connected to case.

NOTE 1: Rating applies for ambient temperatures to 125°C.

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FAIRCHILD SEMICONDUCTOR
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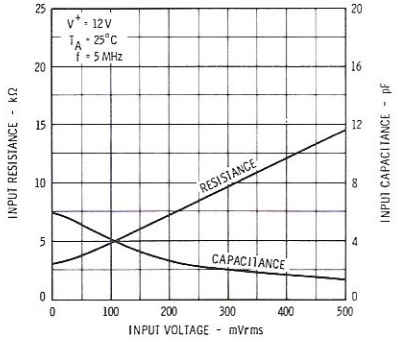
ELECTRICAL CHARACTERISTICS (T_A = 25°C, V^+ = 12 V unless otherwise specified)

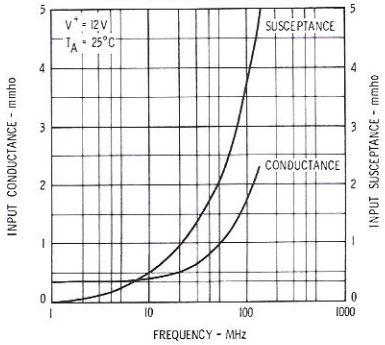
Parameter	Conditions	Min.	Typ.	Max.	Units
Power Consumption	e_{in} = 0		110	170	mW
Quiescent Output Current	e_{in} = 0	2.1	2.5	3.1	mA
Peak-to-Peak Output Current	e_{in} = 400 mV rms, f = 1 kHz	4.0			mA
Output Saturation Voltage				1.7	V
Forward Transadmittance	e_{in} = 10 mV rms, f $\leq$ 5 MHz	29	35		mmho
Input Conductance	e_{in} < 10 mV rms, f $\leq$ 5 MHz		0.30	0.43	mmho
Input Capacitance	e_{in} < 10 mV rms, f $\leq$ 5 MHz		7.0	9.0	pF
Output Capacitance	f $\leq$ 5 MHz		2.0	3.0	pF
Output Conductance	f $\leq$ 5 MHz		0.02	0.04	mmho
Noise Figure	f = 30 MHz, R_s = 500 Ω		6.5		dB
	f = 100 MHz, R_s = 500 Ω		8.0		dB
The following specifications apply for -55°C $\leq T_A \leq$ +125°C					
Quiescent Output Current	e_{in} = 0	1.7		3.1	mA
Peak-to-Peak Output Current	e_{in} = 400 mV rms, f = 1 kHz	3.2			mA
Output Saturation Voltage				1.8	V
Forward Transadmittance	e_{in} = 10 mV rms, f $\leq$ 5 MHz	21			mmho
Input Conductance	e_{in} < 10 mV rms, f $\leq$ 5 MHz			1.2	mmho
Output Conductance	f $\leq$ 5 MHz			0.05	mmho

TYPICAL PERFORMANCE CURVES

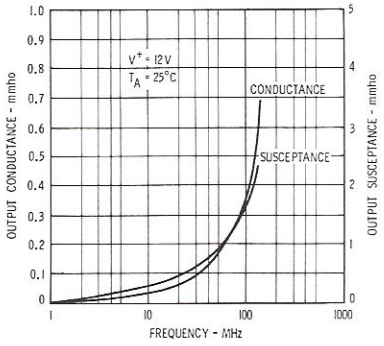
INPUT RESISTANCE AND CAPACITANCE AS A FUNCTION OF INPUT VOLTAGE



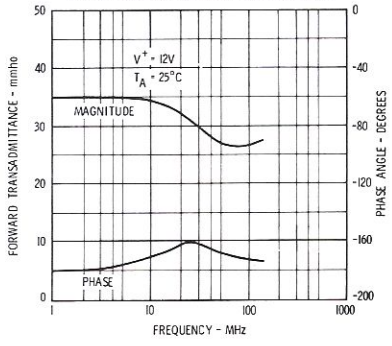
INPUT ADMITTANCE AS A FUNCTION OF FREQUENCY



OUTPUT ADMITTANCE AS A FUNCTION OF FREQUENCY

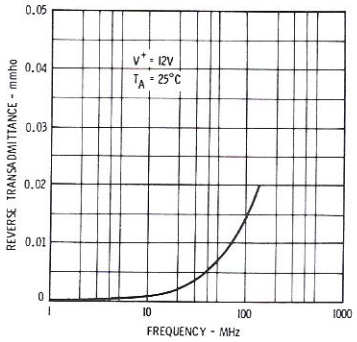


FORWARD TRANSADMITTANCE AS A FUNCTION OF FREQUENCY

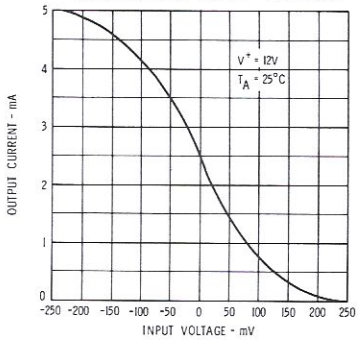


TYPICAL PERFORMANCE CURVES

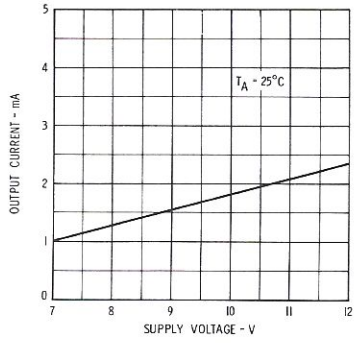
MAXIMUM REVERSE TRANSADMITTANCE AS A FUNCTION OF FREQUENCY



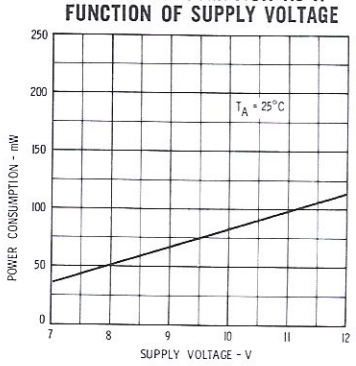
OUTPUT CURRENT AS A FUNCTION OF INPUT VOLTAGE



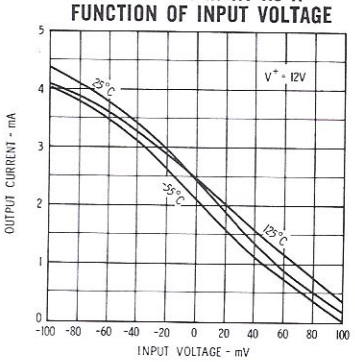
OUTPUT CURRENT AS A FUNCTION OF SUPPLY VOLTAGE



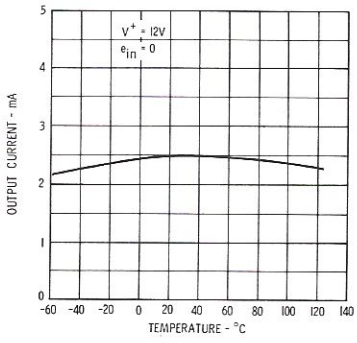
POWER CONSUMPTION AS A FUNCTION OF SUPPLY VOLTAGE



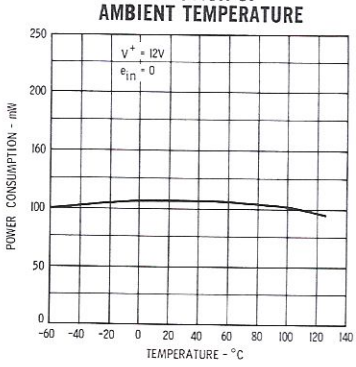
OUTPUT CURRENT AS A FUNCTION OF INPUT VOLTAGE



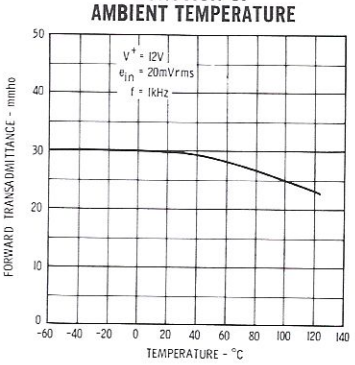
OUTPUT CURRENT AS A FUNCTION OF AMBIENT TEMPERATURE



POWER CONSUMPTION AS A FUNCTION OF AMBIENT TEMPERATURE



TRANSADMITTANCE AS A FUNCTION OF AMBIENT TEMPERATURE



DEFINITION OF TERMS

POWER CONSUMPTION - The DC power required to operate the device with no signal applied.

QUIESCENT OUTPUT CURRENT - The DC current delivered to the load with the input terminals short-circuited.

PEAK-TO-PEAK OUTPUT CURRENT - The short-circuit output current excursion for a large-signal input voltage.

OUTPUT SATURATION VOLTAGE - The minimum voltage to which the output collector may be reduced without degrading circuit performance.

TRANSADMITTANCE - The ratio of the output current to the input voltage.

INPUT ADMITTANCE - The admittance between the input terminals with the output short-circuited.

OUTPUT ADMITTANCE - The admittance between the output terminals with the input short-circuited.

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